



Introduction to *Fourth Grade Everyday Mathematics*[®]

Welcome to *Fourth Grade Everyday Mathematics*. It is part of an elementary school mathematics curriculum developed by the University of Chicago School Mathematics Project (UCSMP).

Everyday Mathematics offers students a broad background in mathematics. Some approaches may differ from those you used as a student, but the approaches used are based on research, field test results, and the mathematics students will need in this century.

***Fourth Grade Everyday Mathematics* emphasizes the following content:**

Algebra and Uses of Variables Reading, writing, and solving number sentences

Algorithms and Procedures Exploring addition, subtraction, multiplication, and division methods; inventing individual procedures and algorithms; and experimenting with calculator procedures

Coordinate Systems and Other Reference Frames Using numbers in reference frames: number lines, coordinates, times, dates, and latitude and longitude

Exploring Data Collecting, organizing, displaying, and interpreting numerical data

Functions, Patterns, and Sequences Designing, exploring, and using geometric and number patterns

Geometry and Spatial Sense Developing an intuitive sense about 2- and 3-dimensional objects, their properties, uses, and relationships

Measures and Measurement Exploring metric and U.S. customary measures: linear, area, volume, weight; and exploring geographical measures

Numbers, Numeration, and Order Relations Reading, writing, and using whole numbers, fractions, decimals, percents, negative numbers; and exploring scientific notation

Operations, Number Facts, and Number Systems Practicing addition and subtraction to proficiency; and developing multiplication and division skills

Problem Solving and Mathematical Modeling Investigating methods for solving problems using mathematics in everyday situations



Naming and Constructing Geometric Figures

During the next few weeks, the class will study the geometry of 2-dimensional shapes. Students will examine definitions and properties of shapes and the relationships among them. Students will use compasses to construct shapes and to create their own geometric designs.

Please keep this Family Letter for reference as your child works through Unit 1.

Vocabulary

Important terms in Unit 1:

concave (nonconvex) polygon

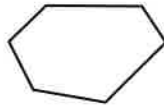
A polygon in which at least one vertex is “pushed in.”



concave polygon

convex polygon

A polygon in which all vertices are “pushed outward.”



convex polygon

endpoint A point at the end of a line segment or a ray.

line Informally, a straight path that extends infinitely in opposite directions.

line segment A straight path joining two points. The two points are called the endpoints of the segment.

parallelogram A quadrilateral that has two pairs of parallel sides. Opposite sides of a parallelogram have equal lengths. Opposite angles of a parallelogram have the same measure.

polygon A 2-dimensional figure that is made up of three or more line segments joined end to end to make one closed path. The line segments of a polygon may not cross.

quadrangle (quadrilateral) A polygon that has four sides and four angles.

ray A straight path that extends infinitely from a point called its endpoint.

rhombus A quadrilateral whose sides are all the same length. All rhombuses are parallelograms. Every square is a rhombus, but not all rhombuses are squares.




trapezoid In *Everyday Mathematics*, a quadrilateral that has exactly one pair of parallel sides.

vertex The point where the rays of an angle, the sides of a polygon, or the edges of a polyhedron meet.

As You Help Your Child with Homework


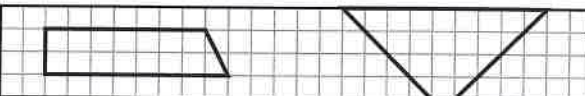
As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Study Links.

Study Link 1•2

2. a. 
- b. 
- c. The line has arrows on both ends, but the line segment does not.
3. a. 
- b. No. A ray's endpoint must be listed first when naming a ray.
4. A ruler has markings on it, so it can be used to measure.

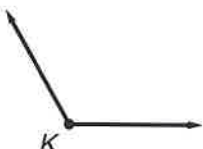
Study Link 1•3

Sample answers:

1. 
2. 

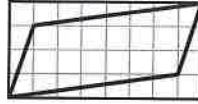
3. The polygons in Problems 1 and 2 have 4 sides and at least 1 pair of parallel sides. The Problem 1 polygons have 2 pairs of equal, parallel sides and all right angles.

4. a.  b. E c. FED

5. 

Study Link 1•4

1. Sample answer:



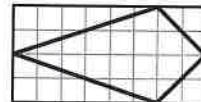
2. a. yes b. yes

- c. yes d. no

3. Sample answer:



4. kite



Study Link 1•5

1. rectangle 2. Equilateral triangle
3. rhombus

Study Link 1•6

1. A, B, C, E, F, G, I 2. B, C
3. C, E, F, I 4. A
5. A, B, D, F, G, H, I 6. D, G, H
7. 2

Study Link 1•8

1. Sample answers:

- a. square



- c. hexagon



2. Sample answer: Sides are all the same length, and interior angles are all the same measure.

STUDY LINK
1•2

Line Segments, Lines, and Rays



1. List at least 5 things in your home that remind you of line segments.



Use a straightedge to complete Problems 2 and 3.

2. a. Draw and label line AB .

b. Draw and label line segment AB .

c. Explain how your drawings of \overleftrightarrow{AB} and \overline{AB} are different.

3. a. Draw and label ray CD .

b. Anita says \overrightarrow{CD} can also be called \overrightarrow{DC} . Do you agree? Explain.

4. Explain how a ruler is different from a straightedge.

Practice

5. $13 - 7 = \underline{\quad}$

6. $15 - 8 = \underline{\quad}$

7. $\underline{\quad} = 90 - 50$

8. $140 - 60 = \underline{\quad}$

9. $\underline{\quad} = 57 - 39$

10. $115 - 86 = \underline{\quad}$

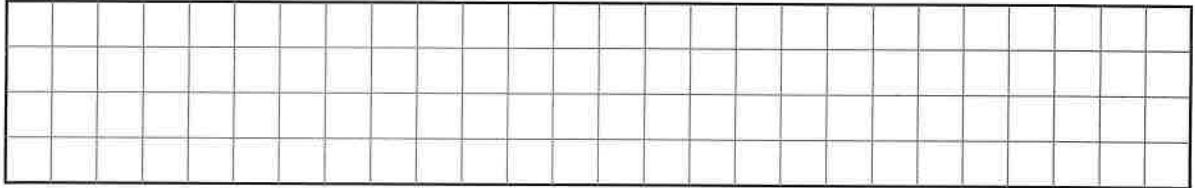
STUDY LINK
1•3

Angles and Quadrangles

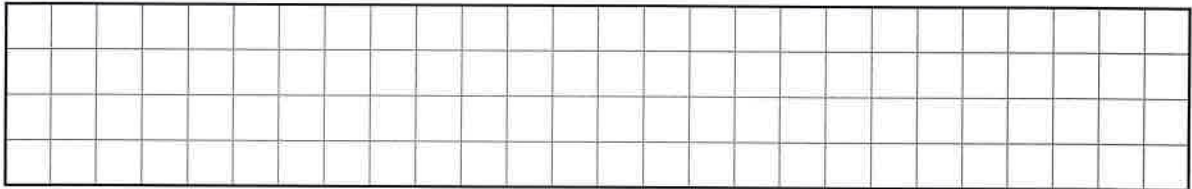


Use a straightedge to draw the geometric figures.

1. Draw 2 examples of a rectangle.



2. Draw 2 examples of a trapezoid.



3. How are the polygons in Problems 1 and 2 similar? How are they different?

4. a. Draw right angle DEF .

5. Draw an angle that is larger than a right angle. Label the vertex K .

b. What is the vertex of the angle? Point _____

c. What is another name for $\angle DEF$? \angle _____

Practice

6. $9 + 8 =$ _____ 7. $7 + 8 =$ _____ 8. $30 + 80 =$ _____

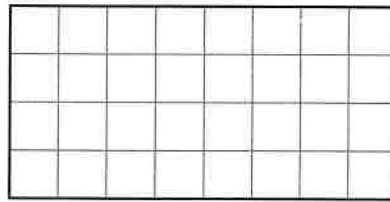
9. _____ $= 50 + 40$ 10. _____ $= 17 + 94$ 11. $158 + 93 =$ _____

STUDY LINK
1•4

Classifying Quadrangles



1. A parallelogram is a quadrangle (quadrilateral) that has 2 pairs of parallel sides.



Draw a parallelogram.

2. Answer *yes* or *no*. Explain your answer.

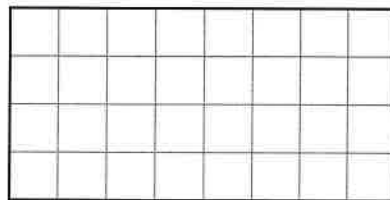
a. Is a rectangle a parallelogram? _____

b. Is a square a parallelogram? _____

c. Is a square a rhombus? _____

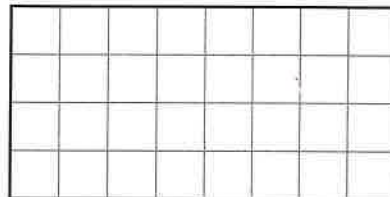
d. Is a trapezoid a parallelogram? _____

3. Draw a quadrangle that has at least 1 right angle.



4. Draw a quadrangle that has 2 pairs of equal sides but is NOT a parallelogram.

This is called a _____.


Practice

5. $12 - 6 =$ _____

6. $16 - 7 =$ _____

7. $210 - 150 =$ _____

8. _____ $= 140 - 80$

9. _____ $= 93 - 58$

10. $123 - 76 =$ _____

Polygon Riddles

Answer each riddle. Then use a straightedge to draw a picture of the shape in the space to the right.

1. I am a quadrangle.
I have 2 pairs of parallel sides.
All of my angles are right angles.
I am not a square.

What am I? _____

2. I am a polygon.
All of my sides have the same measure.
All of my angles have the same measure.
I have 3 sides.

What am I? _____

3. I am a polygon.
I am a quadrangle.
All of my sides are the same length.
None of my angles are right angles.

What am I? _____

Try This

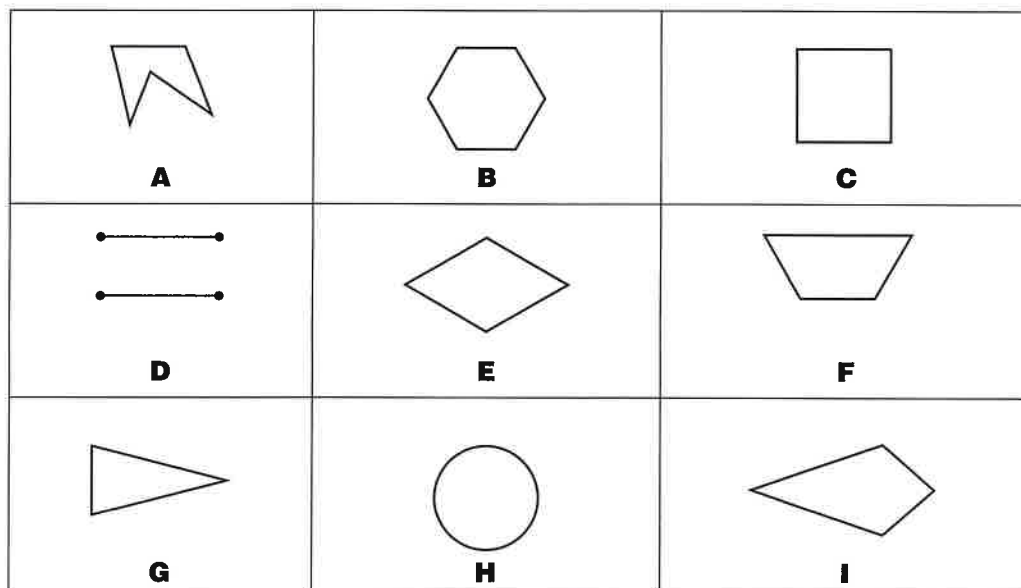
4. On the back of this page, make up your own polygon riddle using 4 clues. Make 2 of the clues hard and 2 of the clues easy. Check your riddle by using a straightedge to draw a picture of the polygon. Ask a friend or someone at home to solve your polygon riddle.

Practice

5. $8 + 9 =$ _____ 6. $7 + 8 =$ _____ 7. $90 + 70 =$ _____
8. _____ $= 60 + 50$ 9. _____ $= 54 + 59$ 10. $185 + 366 =$ _____

STUDY LINK
1•6

Properties of Geometric Figures



Write the letter or letters that match each statement.

- These are polygons. _____
- These are regular polygons. _____
- These are quadrangles. _____
- These are concave. _____
- These are NOT parallelograms. _____
- These do NOT have any right angles or angles whose measures are larger than a right angle. _____

Try This

7. Take a paper clip and two pencils. Create a homemade compass. You may not bend or break the paper clip. How many different size circles can you make with it? _____

Practice

8. $30 + 50 =$ _____ 9. $40 + 60 =$ _____ 10. $250 + 140 =$ _____
 11. _____ $= 80 - 20$ 12. _____ $= 120 - 70$ 13. $460 - 230 =$ _____

STUDY LINK
1.7

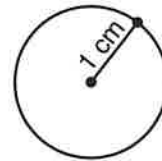
The Radius of a Circle



1. Find 3 circular objects. Trace around them to make 3 circles in the space below or on the back of this page. For each circle, do the following:

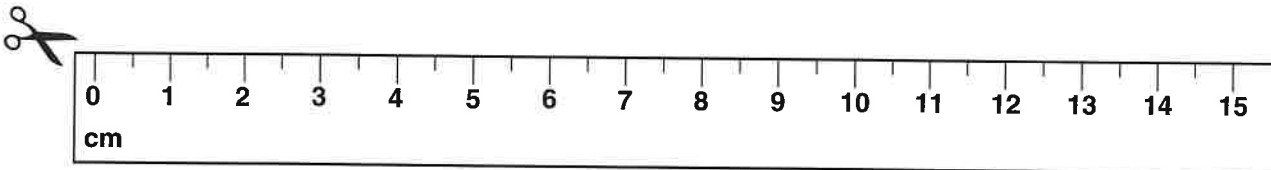
- a. Draw a point to mark the approximate center of the circle. Then draw a point on the circle.
- b. Use a straightedge to connect these points. This line segment is a **radius** of the circle.
- c. Use a ruler to measure the radius to the nearest centimeter. If you do not have a ruler at home, cut out the one at the bottom of this page.
- d. Record the measure of the radius next to the circle.

Example:



Practice

- | | | |
|---------------------|---------------------|----------------------|
| 2. _____ = 80 + 20 | 3. _____ = 30 + 90 | 4. 580 + 370 = _____ |
| 5. 120 - 30 = _____ | 6. 160 - 70 = _____ | 7. 650 - 280 = _____ |



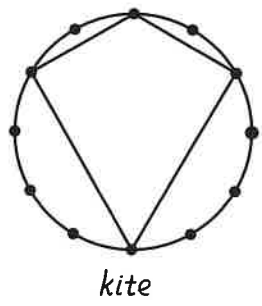
STUDY LINK
1•8

Inscribed Polygons



1. Use a straightedge to inscribe a different polygon in each of the circles below. Write the name of each polygon.

Example:



a. _____

b. _____



c. _____

d. _____

2. Are any of the polygons that you drew *regular polygons*? Explain how you know.

Practice

- | | | |
|----------------------|-----------------------|------------------------|
| 3. $41 + 27 =$ _____ | 4. _____ $= 263 + 59$ | 5. $461 + 398 =$ _____ |
| 6. _____ $= 72 - 36$ | 7. $158 - 71 =$ _____ | 8. $742 - 349 =$ _____ |